Volunteer Lake Assessment Program Individual Lake Reports

HARVEY LAKE, NORTHWOOD, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,553	**Max. Depth (m):**	6.5	**Flushing Rate (yr^{1})**	2.7
Surface Area (Ac.):	105	**Mean Depth (m):**	3.1	**P Retention Coef:**	0.58
Shore Length (m):	3,900	**Volume (m^{3}):**	1,320,500	**Elevation (ft):**	613

TROPHIC CLASSIFICATION

Year	Trophic class
1990	EUTROPHIC
2006	EUTROPHIC

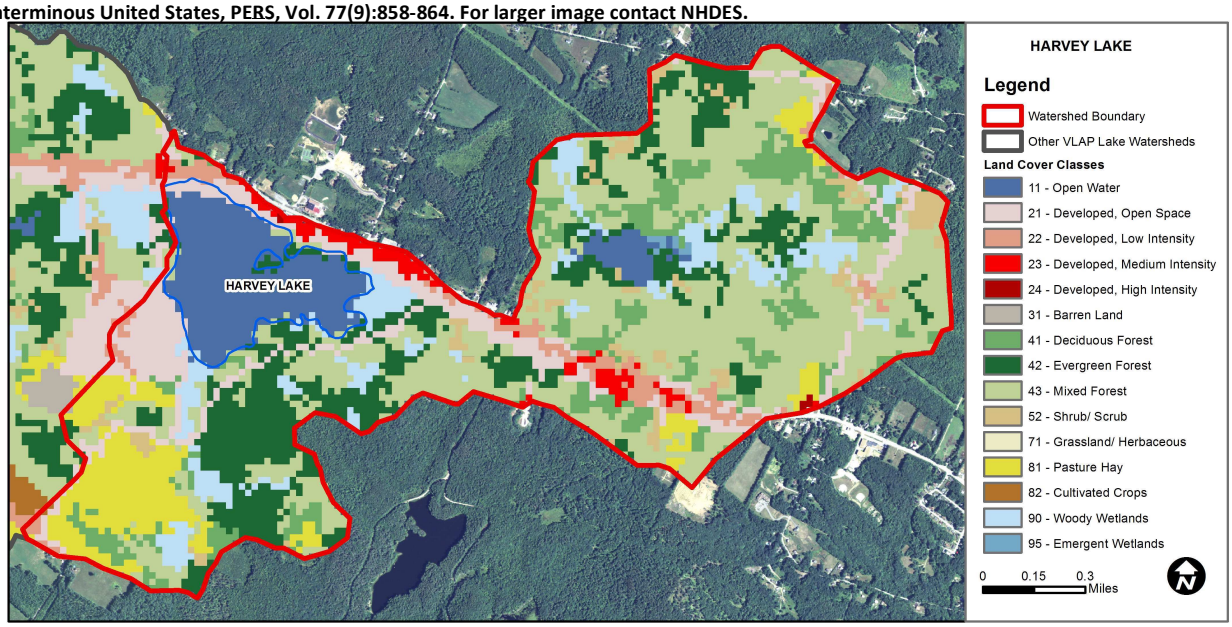
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



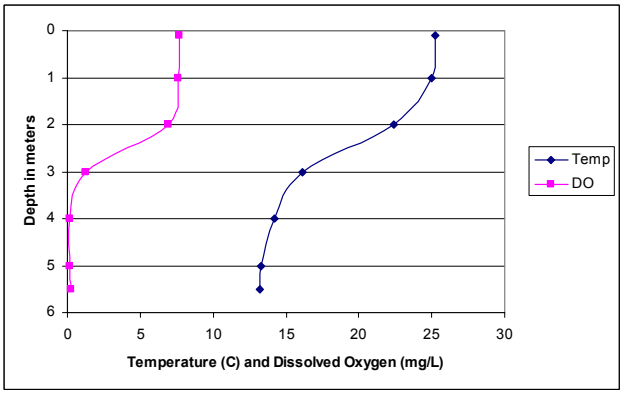
Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	9.57	Barren Land	0.02	Grassland/Herbaceous	0
Developed-Open Space	9.11	Deciduous Forest	9.23	Pasture Hay	7.54
Developed-Low Intensity	3.06	Evergreen Forest	15.3	Cultivated Crops	0.03
Developed-Medium Intensity	1.78	Mixed Forest	34.03	Woody Wetlands	6.8
Developed-High Intensity	0.1	Shrub-Scrub	3.33	Emergent Wetlands	0.17

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
HARVEY LAKE, NORTHWOOD, NH
2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic)*

- **CHLOROPHYLL-A:** Chlorophyll levels were elevated and were representative of algal bloom conditions in September. Historical trend analysis indicates chlorophyll levels fluctuate greatly from year to year.
- **CONDUCTIVITY/CHLORIDE:** Conductivity and chloride were slightly elevated.
- **TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) and hypolimnetic (lower water layer) phosphorus levels were slightly elevated and are typically greater than the NH lake median. Historical trend analysis indicates a relatively stable epilimnetic phosphorus trend. Inlet phosphorus levels were elevated throughout the summer and have historically been high.
- **TRANSPARENCY:** Lake transparency was much lower in September during the algal bloom, and historical trend analysis indicates a significantly decreasing (worsening) lake transparency since monitoring began.
- **TURBIDITY:** Turbidity was generally elevated at all stations likely due to lower water levels and flow. Epilimnetic turbidity was elevated in September as a result of the algal bloom.
- **pH:** pH levels were in a critical range for aquatic life.
- **RECOMMENDED ACTIONS:** Continue working with local agricultural operations on best management practices to reduce phosphorus loading. Conduct a septic system survey to gain more information on the number, age and type of systems along the lake, and educate homeowner's on care and maintenance of septic systems. The lake has previously experience cyanobacteria blooms and experienced an algal bloom in September. Notify DES of suspected cyanobacteria and educate lake residents on the precautions necessary to stay safe during bloom conditions. Keep up the great work!

Dissolved Oxygen & Temperature Profile



Harvey Lake Phytoplankton Population

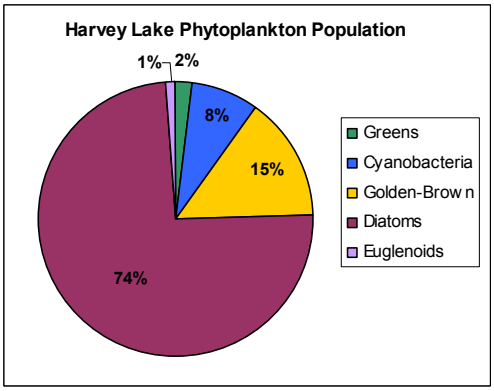


Table 1. 2012 Average Water Quality Data for HARVEY LAKE

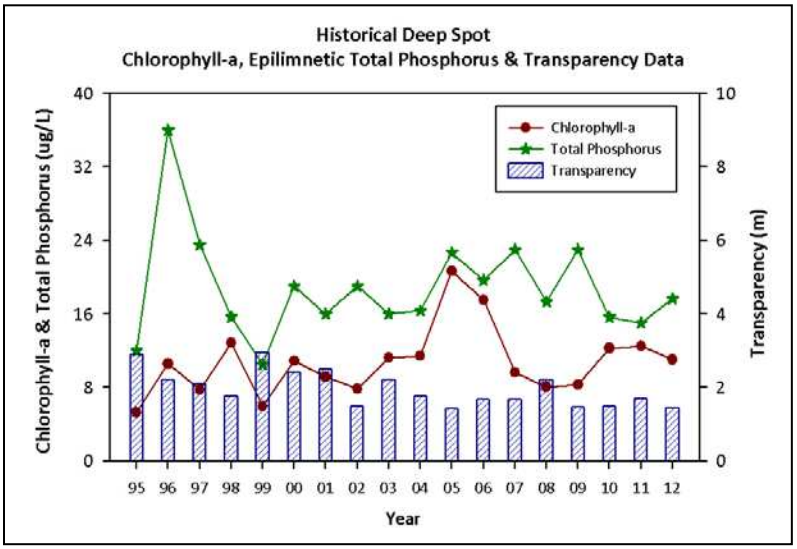
Station Name	Alk.	Chlor-a	Chloride	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	ug/l	m		ntu	
						NVS	VS		
Deep Epilimnion	5.20	11.04	18	101.7	18	1.45	2.45	3.19	6.76
Deep Hypolimnion				100.0	26			3.33	6.15
Inlet 1			18	107.0	40			2.63	6.23
Outlet				101.4	32			2	6.24

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Variable	Data fluctuate greatly, but are not significantly increasing or decreasing.
Transparency	Degrading	Data significantly decreasing (worsening).
Phosphorus (epilimnion)	Stable	Data not significantly increasing or decreasing.



This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:
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